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(54) **Self-erecting shelter for motor vehicles in general**

Selbstaufstellende Garage für Kraftfahrzeuge

Garage à montage automatique pour véhicules automobiles

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## Description

The present invention relates to a self-erecting shelter for motor vehicles in general.

As is known, prefabricated garages for motor vehicles have long been commercially available; in a typical embodiment, they are in practice defined by means of walls made of metal panels which can be assembled together so as to form the garage. These types of shelters have the advantage that they are relatively simple to manufacture, but have the disadvantage of being considered as fixed installations, so that it is necessary to apply for the related permits to the competent authorities in order to install them where required.

Also known from US-A- 3 399 686, is a portable garage as defined in the preamble of claim 1, describing a collapsible vehicle shelter adapted to be supported from a surface over which vehicles may move and including a base, a plurality of cover supporting members movably supported from said base for movement relative thereto between collapsed positions and extended cover supported positions, including a treadle means over which the wheel of the associated vehicle may be moved to automatically erect the vehicle shelter over the vehicle.

Other kinds of solutions, constituted by arc-like elements which are fixed to the ground and support awnings which in practice define the side walls, have failed to prove to be sufficiently safe, since they do not have a structure suitable to withstand the impact of wind, so that such shelters can be pulled down in case of relatively strong wind.

Another problem which is typical of all the above mentioned solutions is constituted by the fact that they imply relatively complicated and heavy structures which require relatively long times for their installation and consequently cannot be easily transferred from one place to another.

The aim of the present invention is indeed to eliminate the problems described above by providing a self-erecting shelter for motor vehicles in general which can be used without requiring fixed installation on the ground but by simply resting it thereon.

Within the scope of the above aim, a particular object of the invention is to provide a shelter which is self-erecting, i.e. assumes its shape when it is used, i.e. when the vehicle is inserted, and which furthermore, when the vehicle is not present, assumes in practice a collapsed configuration, i.e. does not have upright surfaces which can be subjected to the impact of wind.

Another important object is to provide a device which is activated upon coming into contact with the driving force of the wheels of a vehicle without requiring specific calibration for the different weights of vehicles.

Another object of the present invention is to provide a shelter which is extremely compact and light and consequently can be transported to the various points of use without any problem and is furthermore extremely prac-

tical and safe.

Not least object of the present invention is to provide a shelter which can be easily obtained starting from commonly commercially available elements and materials and is furthermore competitive from a merely economical point of view.

This aim, the objects mentioned and others which will become apparent hereinafter are achieved by a self-erecting shelter for motor vehicles in general, as defined in the appended claims.

Further characteristics and advantages of the present invention will become apparent from the following detailed description of some preferred but not exclusive embodiments thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a schematic perspective view of a first embodiment of the self-erecting shelter according to the invention, in erected position;

figure 2 is a detail view of the entry end of the shelter, shown schematically in erected position;

figure 3 is a schematic lateral elevation view of the shelter according to the invention in collapsed position;

figure 4 is a view of the shelter during the entry of the motor vehicle, with consequent erection of the shelter;

figure 5 is a schematic lateral elevation view of the shelter in erected position;

figure 6 is a schematic view of the shelter, taken from one end, with the vehicle inserted therein; and figure 7 is a schematic lateral elevation view of a second embodiment of the self-erecting shelter according to the invention.

With reference to the above figures, the self-erecting shelter for motor vehicles in general, according to the invention, which is generally designated by the reference numeral 1, comprises a base frame 2 which rests on the ground and defines, inside it, a pair of guides 3 for the passage of the wheels 4 of a motor vehicle, generally designated by the reference numeral 5.

The guides 3 are spaced so that they can adapt to the wheel base of all normally commercially available vehicles.

The base frame is furthermore provided with a pair of side members 7, and a passage area 6 is defined to the side of at least one of the guides 3 in order to allow the driver to enter and exit from the motor vehicle.

A main arc element 10 is provided at the base frame, and more precisely at the entry end; said arc can have any shape and is hinged to the side members at the free ends of its arms, so that it can assume an erected position, in which it is substantially at right angles to the plane defined by the base frame, and a collapsed position, in which it overlaps said base frame.

Intermediate arc elements, designated by the refer-

ence numeral 11, are furthermore hinged to the side members 7 and support, in cooperation with the main arc 10, an awning 15 which is advantageously anchored to the base frame at the side members and at the end of the base frame which is opposite to the entry end.

With this arrangement, in the erected position the awning is supported by the central portion of the various arcs and consequently defines an enclosed space which surrounds the motor vehicle.

In order to perform complete closure, closure flaps, designated by the reference numeral 16, are advantageously provided and are connected to the uprights 10a of the main arc 10 and in practice define a closure door for said shelter.

An important feature of the self-erecting shelter according to the invention is constituted by the fact that means are provided for moving the main arc, i.e. for transferring it from the collapsed position to the erected position and/or vice versa, and are actuated directly by the translatory motion of the vehicle on the base frame.

The swinging movement of main arc and intermediate arcs from a horizontal collapsed position to a vertical erected position is effected by action of vehicle wheels engaging a transverse roller 20, said roller extends transversely to the extension of the guides 3 and is supported, at its ends, by chains 21 which are rotatably supported inside the members 7 and wind around a free transmission roller 22 and around a drive roller 23 which is connected to a reduction unit 24 whose output shaft is fixed to the end of the main arc.

The translatory motion of the chains, caused by the advancement of the motor vehicle on the base frame, thus causes a consequent rotation of the main arc, moving it from the collapsed position (figure 3) to a raised position (figure 4).

As the translatory motion of the vehicle on the base frame continues, the complete erection of the main arc is achieved and said arc arranges itself substantially at right angles to the base frame.

Advantageously, a stop element 30 for the front wheel of the vehicle is provided on the guides 3; said element is arranged in the position which corresponds to the attainment of the erected position for the main arc.

Advantageously but not necessarily, there is a rounded ridge-like element 31 over which the wheel 4 passes before engaging against the stop element, thus providing in practice a seat for accommodating the wheel of the vehicle in the required position.

The ridge-like element thus prevents the vehicle from accidentally leaving from the base frame by gravity.

During the erection of the main arc, the intermediate arcs are gradually raised, since it is the awning itself which, by being pulled by the main arc, in practice raises in succession the intermediate arcs until it reaches the final position.

The intermediate arcs, in their final position, are advantageously inclined toward the end of the base frame which is opposite to the entry end, so as to automatically

obtain the collapse of the arcs when the motor vehicle leaves the base frame.

In fact, as the motor vehicle progressively moves outward, the intermediate arcs arranged toward the inner end of the base frame, and then all the subsequent arcs, rotate downward.

During exit, the chains in practice unwind in the opposite direction and consequently allow the rotation of the main arc, too, in the collapse direction.

It is possible but not strictly necessary to provide elastic return means 60 for the intermediate arcs arranged inward, so as to allow their immediate collapse when the vehicle exits.

With the described arrangement, the shelter according to the invention is in erected position only when the vehicle is contained inside it, so a shelter stabilization element is present inside the shelter itself, which cannot therefore move even if it is affected by the impact of a strong wind, whereas when the vehicle is outside the shelter said shelter is automatically in collapsed position.

That is to say, in practice, the shelter passes to the erected position, when the vehicle is inserted therein, and into the collapsed position when the vehicle exits.

Another important aspect to be stressed is constituted by the fact that the shelter, as described above, does not require a fixed installation, i.e. does not need to be anchored to the ground, since the vehicle present inside it acts as a stabilization element, whereas if the vehicle is not present inside it stabilization is not required, since the shelter is in collapsed position.

The invention thus conceived is susceptible to numerous modifications and variations, all of which are within the scope of the inventive concept as defined by the appended claims.

Furthermore, as can be seen in figure 7, in order to avoid excessive tensioning of the awning 15 during the closing thereof, hinge connections 11b can be provided on the intermediate arc elements 11a thereby to allow a refolding, without tension, in a direction away from the upper portions of the intermediate arc elements. A connecting bar 11c, hinged to the intermediate arc elements 11a and to the main arc element 10, is also provided so as to provide stability and uniform movement.

All the details may furthermore be replaced with other technically equivalent elements.

In practice, the materials employed, as well as the contingent shapes and dimensions, may be any according to the requirements.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the scope of each element identified by way of example by such reference signs.

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## Claims

1. A self-erecting shelter (1) for motor vehicles in general, comprising a base frame (2) which defines guides (3) for the advancement of the wheels (4) of a vehicle (5), a main arc (10) being associated at the entry end of said base frame (2), said main arc (10) being arrangeable in an erected position, in which it is arranged substantially at right angles to the plane defined by said base frame (2), and in a collapsed position, in which it overlaps said base frame (2), an awning (15) being connected to said main arc (10) and being coupled at least laterally to said base frame (2), characterized in that it further comprises at least one transverse roller (20), arranged so as to be able to be engaged by the wheels of a vehicle moving along said guides (3), said transverse roller (20) extending transversely to said guides (3) actuates means (20-24) to provide for the movement of said main arc (10).
2. A shelter according to claim 1, characterized in that said base frame (2) is arranged so as to rest on the ground and comprises said guides (3), formed within base frame (2) which provide for said wheels (4) of said vehicle to move along.
3. A shelter according to claim 1, characterized in that said base frame comprises a plurality of intermediate arcs (11; 11a) movably supported by pivot arrangement to parallel opposite side members (7) at points spaced therealong.
4. A shelter according to claim 3, characterized in that it comprises a collapsible cover (15) being disposed over and secured to each of the said plurality of intermediate arcs (11; 11a) pivotally secured at least laterally to said parallel opposite side members (7) of said base frame (2) for movement between lowered collapsed positions and erected positions.
5. A shelter according to claim 3, characterized in that chains (21) are accommodated in said members (7) and wind around a free pinion (22), which is located at the end opposite to the entry end of said base frame (2), and around a drive pinion (23) which is operatively associated with a reduction unit (24).
6. A shelter according to one or more of the preceding claims, characterized in that it comprises, on said guides (3), a stop element (30) which can be engaged by said wheel (4) of the vehicle in order to define the position which must be assumed by the vehicle (5) in order to arrange said main arc (10) in erected position.
7. A shelter according to claim 6 characterized in that it comprises, in said guides (3), a rounded ridge-like

element (31) which is spaced from said stop element (30) and is suitable to define, in cooperation with said stop element, (30) a seat for the retention of the wheel of the vehicle.

8. A shelter according to one or more of the preceding claims, characterized in that it comprises flaps (16) which are associated with said awning (15) and are connected to the uprights of said main arc (10) in order to define a door for the closure of said shelter.
9. A shelter according to claim 3 or 4, characterized in that it comprises hinge connections (11b) provided at median positions of said intermediate arc elements (11a), and a connecting bar (11c) pivoted to said main arc element (10) and said intermediate arc elements (11; 11a) for the contemporary rotation of said main arc element and said intermediate arc elements.

## Patentansprüche

1. Selbstaufstellendes Schutzdach (1) für Kraftfahrzeuge im allgemeinen, das einen Grundrahmen (2), welcher Führungen (3) für die Beförderung der Räder (4) eines Fahrzeugs (5) definiert, einen Hauptbogen (10), welcher an dem Eingangsende des Grundrahmens (2) verbunden ist, wobei der Hauptbogen (10) in einer aufgerichteten Position, in der er im wesentlichen im rechten Winkel zu der durch den Grundrahmen (2) definierten Ebene angeordnete ist, und in einer zusammengelegten Position, in der er den Grundrahmen (2) überlappt, anordenbar ist, und eine Plane (15) aufweist, welche mit dem Hauptbogen (10) verbunden ist und wenigstens quer an den Grundrahmen (2) gekoppelt ist, dadurch gekennzeichnet, daß es weiterhin wenigstens eine Querrolle (20) aufweist, die derart angeordnet ist, daß sie von den Rädern eines sich entlang den Führungen (3) bewegenden Fahrzeugs eingegriffen werden kann und daß die sich quer zu den Führungen (3) erstreckende Querrolle (20) Mittel (20-24) betätigt, um für die Bewegung des Hauptbogens (10) zu sorgen.
2. Schutzdach nach Anspruch 1, dadurch gekennzeichnet, daß der Grundrahmen (2) derart angeordnet ist, daß er auf dem Boden ruht, und die Führungen (3) aufweist, welche innerhalb des Grundrahmens (2) gebildet sind und dafür sorgen, daß die Räder (4) des Fahrzeugs sich dort entlang bewegen.
3. Schutzdach nach Anspruch 1, dadurch gekennzeichnet, daß der Grundrahmen eine Menzähl von Zwischenbögen (11; 11a) aufweist, die über eine Gelenkanordnung beweglich zu parallelen, gegen-

überliegenden Seitenelementen (7) an dort beabstandeten Stellen getragen sind.

4. Schutzdach nach Anspruch 3, dadurch gekennzeichnet, daß es eine zusammenlegbare Abdeckung (15) aufweist, die über jeder der Mehrzahl von Zwischenbögen (11; 11a) angeordnet und an jeder gesichert ist, und daß sie schwenkbar wenigstens quer zu den parallelen, gegenüberliegenden Seitenelementen (7) des Grundrahmens (2) für eine Bewegung zwischen herabgelassenen, zusammengelegten Positionen und aufgerichteten Positionen befestigt sind.
5. Schutzdach nach Anspruch 3, dadurch gekennzeichnet, daß Ketten (21) in den Elementen (7) untergebracht sind und um ein freies Ritzel (22), welches an dem Ende gegenüber dem Eingangsende des Grundrahmens (2) angeordnet ist, und um ein Antriebsritzel (23) gewunden sind, welches wirksam mit einer Reduktionseinheit (24) verbunden ist.
6. Schutzdach nach einem oder mehreren der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß es an den Führungen (3) ein Halteelement (30) aufweist, welches von dem Rad (4) des Fahrzeugs eingegriffen werden kann, um die Position zu definieren, die von dem Fahrzeug (5) eingenommen werden soll, um den Hauptbogen (10) in eine aufgerichtete Position anzuordnen.
7. Schutzdach nach Anspruch 6, dadurch gekennzeichnet, daß es in den Führungen (3) ein gerundetes wulstartiges Element (31) aufweist, welches von dem Halteelement (30) beabstandet ist und geeignet ist, zusammen mit dem Halteelement (30) ein Auflager zum Zurückhalten des Rades des Fahrzeugs zu definieren.
8. Schutzdach nach einem oder mehreren der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß es Klappen (16) aufweist, die mit der Plane (15) verbunden sind und mit den Stützen des Hauptbogens (10) verbunden sind, um eine Tür für den Verschuß des Schutzdaches zu definieren.
9. Schutzdach nach Anspruch 3 oder 4, dadurch gekennzeichnet, daß es Gelenkverbindungen (11b), die an mittleren Positionen der Zwischenbogenelemente (11a) angeordnet sind, und eine Verbindungsstange (11c) aufweist, die mit dem Hauptbogenelement (10) und den Zwischenbogenelementen (11; 11a) für die gleichzeitige Rotation des Hauptbogenelements und der Zwischenbogenelemente gelenkig verbunden ist.

## Revendications

1. Un garage ou abri à montage automatique pour des véhicules à moteur en général, comprenant un cadre de base (2) qui définit des guides (3) pour l'avancement des roues (4) d'un véhicule (5), un arc principal (10) étant associé à l'extrémité d'entrée dudit cadre de base (2), ledit arc principal (10) étant susceptible d'être disposé dans une position érigée, dans laquelle il est disposé sensiblement à angle droit par rapport au plan défini par ledit cadre de base (2), et dans une position repliée, dans laquelle il recouvre ledit cadre de base (2), une bâche (15) étant reliée audit arc principal (10) et étant couplée, au moins latéralement audit cadre de base, caractérisé en ce qu'il comporte en outre au moins un rouleau transversal (20) disposé de façon à être susceptible de venir en contact avec les roues d'un véhicule se déplaçant le long desdits guides (3), ledit rouleau transversal (20) s'étendant transversalement à des moyens d'actionnement (20 à 24) desdits guides (3), pour provoquer le déplacement dudit arc principal (10).
2. Un garage selon la revendication 1, caractérisé en ce que ledit cadre de base (2) est disposé de façon à reposer sur le sol et comporte lesdits guides (3), formés à l'intérieur du cadre de base (2) et qui permettent auxdites roues (4) dudit véhicule de se déplacer longitudinalement.
3. Un garage selon la revendication 1, caractérisé en ce que ledit cadre de base comporte une pluralité d'arcs intermédiaires (11; 11a) supportés de façon mobile par un agencement pivotant sur des organes latéraux parallèles et opposés (7) en des points espacés longitudinalement.
4. Un garage selon la revendication 3, caractérisé en ce qu'il comporte une couverture repliable (15) disposée au-dessus de lui et fixée à chacun parmi ladite pluralité d'arcs intermédiaires (11; 11a) fixés de façon pivotante au moins latéralement auxdits organes latéraux parallèles et opposés (7) dudit cadre de base (2) pour se déplacer entre des positions repliées abaissées et des positions érigées.
5. Un garage selon la revendication 3, caractérisé en ce que des chaînes (21) sont disposées dans lesdits organes (7) et s'enroulent autour d'un pignon de chaîne monté fou (22), qui est disposé à l'extrémité opposée à l'extrémité d'entrée dudit cadre de base (2), et autour d'un pignon de chaîne moteur (23) qui est fonctionnellement associé à une unité de réducteur (24).
6. Un garage selon l'une ou plusieurs des revendications précédentes, caractérisé en ce qu'il comporte,

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sur lesdits guides (3), un élément de butée (30) qui peut venir en contact avec ladite roue (4) du véhicule afin de définir la position qui doit être prise par le véhicule (5) afin de disposer ledit arc principal (10) en position érigée.

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7. Un garage selon la revendication 6, caractérisé en ce qu'il comporte, dans lesdits guides (3), un élément à arêtes arrondies (31) qui est espacée dudit élément de butée (30) et qui est susceptible de définir, en coopération avec ledit élément de butée (30), un siège apte à retenir la roue du véhicule.

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8. Un garage selon l'une ou plusieurs des revendications précédentes, caractérisé en ce qu'il comporte des volets (16) qui sont associés à ladite bâche (15) et qui sont reliés aux montants dudit arc principal (10) afin de définir une porte pour la fermeture dudit garage.

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9. Un garage selon la revendication 3 ou 4, caractérisé en ce qu'il comporte des liaisons de charnière (11b) prévues dans des positions médianes desdits éléments d'arc intermédiaire (11a) et une barre de liaison (11c) articulée audit élément d'arc principal (10) et auxdits éléments (11, 11a) d'arc intermédiaire pour assurer la rotation simultanée dudit élément d'arc principal et desdits éléments d'arc intermédiaires.

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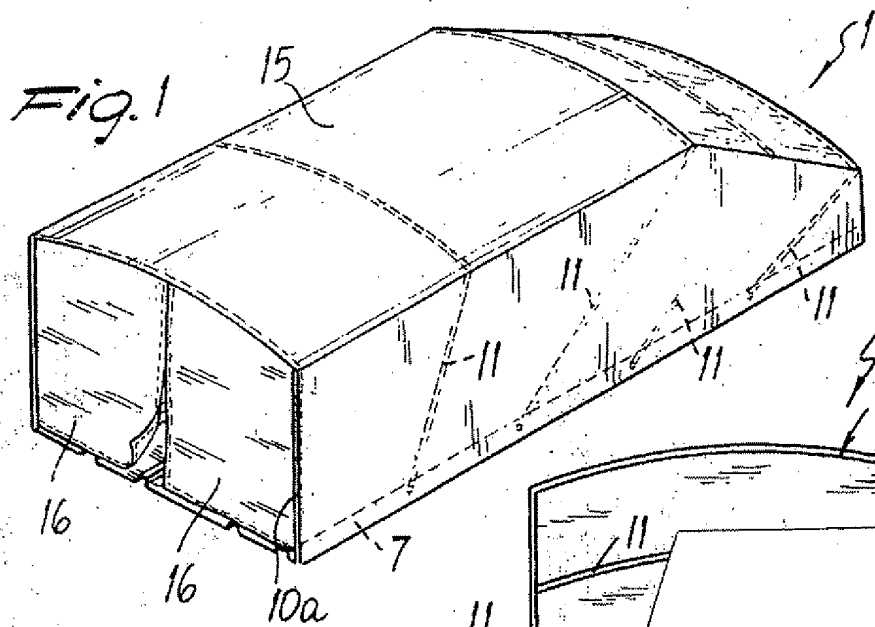
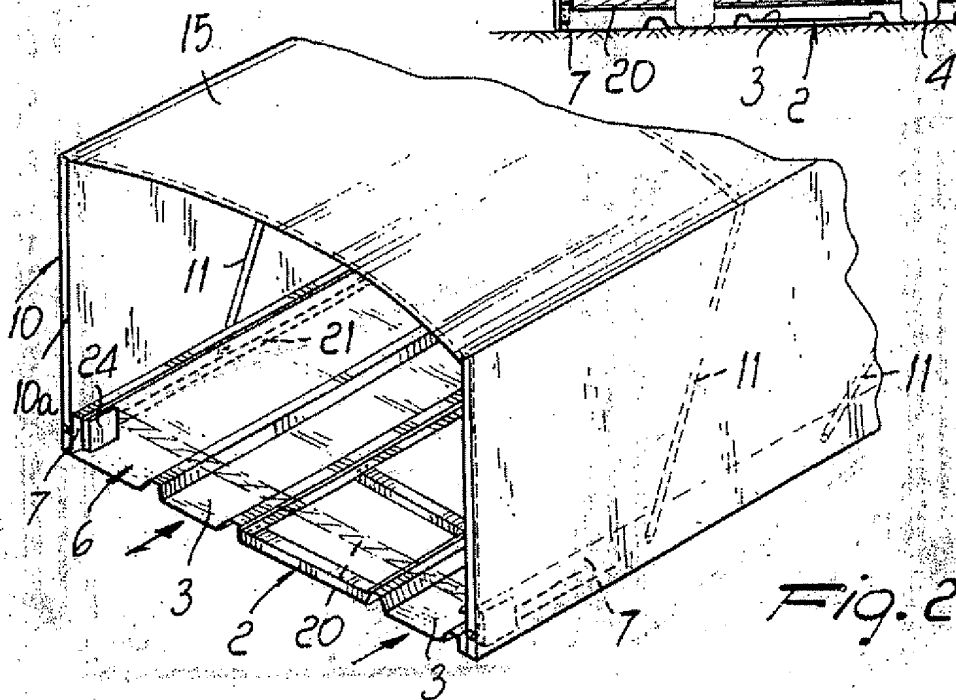
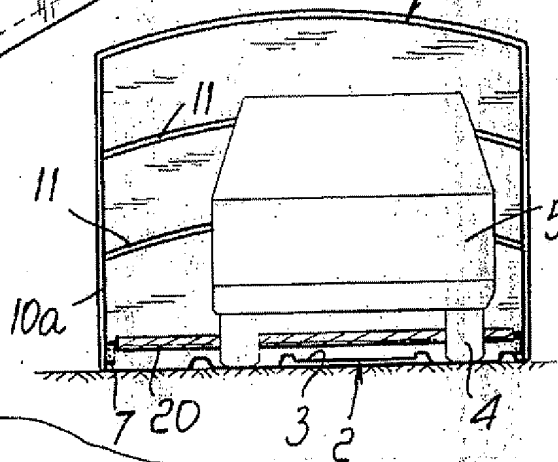
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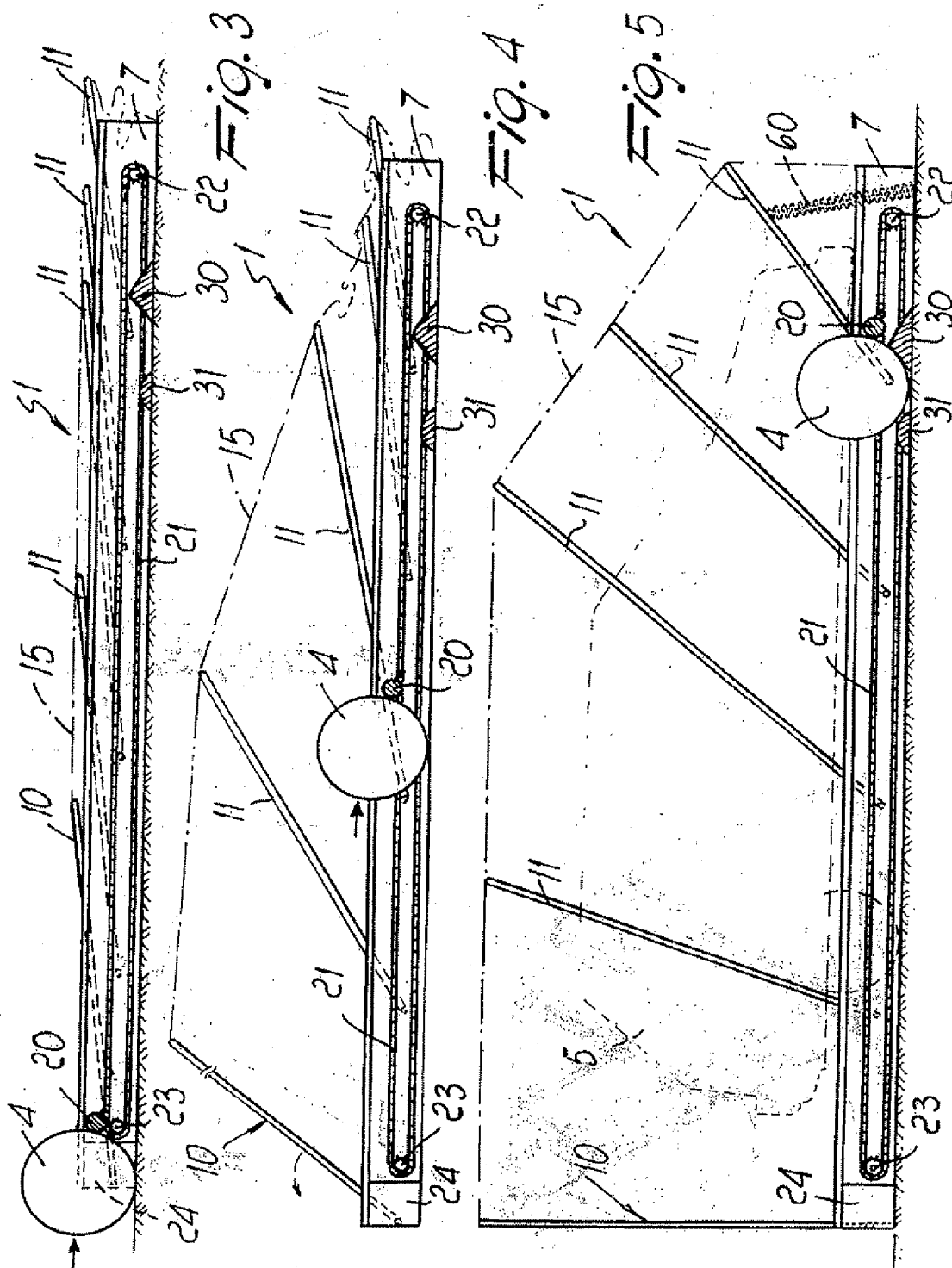
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*Fig. 6*

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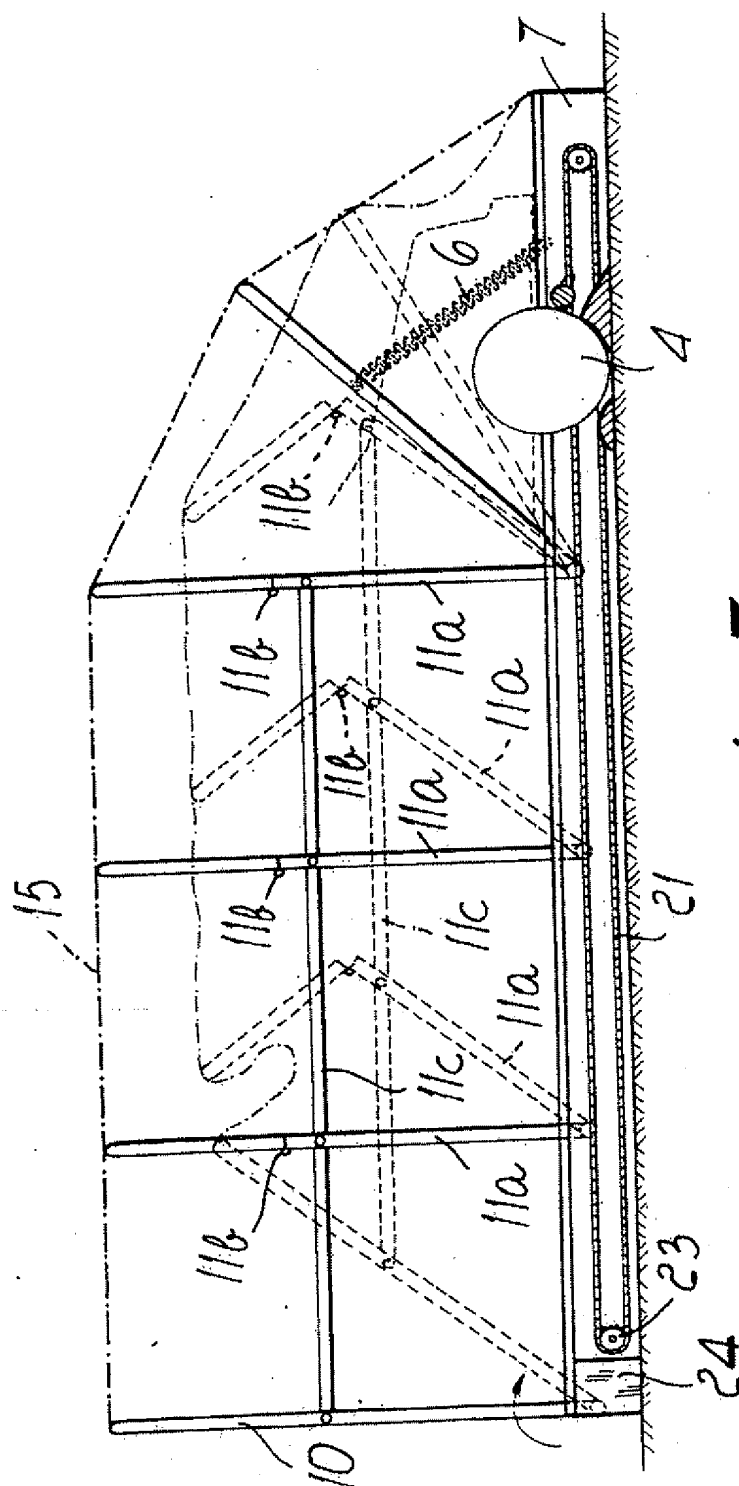


FIG. 7